IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

App. No.	:	10/065,992	Confirmation No. 6667
Applicant	:	Haruyo Fukui, et al.	
Filed	:	December 8, 2002	
T.C./A.U.	:	1794	
Examiner	:	Archene A. Turner	
Docket No.	:	039.0005	
Customer No.	:	29453	

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

This constitutes an Information Disclosure Statement pursuant to 37 C.F.R. §§ 1.97 and 1.98. The attached document listed on the accompanying "IDS List of References" (a substitute for Form PTO/SB/08) is hereby brought to the Examiner's attention in the patent application identified above.

REMARKS

A Notice of Allowability was issued on April 18, 2008 in the present application. In the interim, information that may be material to the patentability of the present claims has come into the awareness of the present Applicant. The presently submitted document, Cite No. F1 as listed on the IDS List of References, was cited in an appeal proceeding undertaken in Japanese Pat. App. No. 2002-235624, one of the two applications on the basis of which priority under 35 U.S.C. § 119 is claimed in the present application.

Specifically, Cite No. F1, which is not in English, was cited in Pat. App. No. 2002-235624 by the Japanese examiner in a "Prefatory Report" (similar to an Examiner's Answer in an appeal at the USPTO) incorporated into an Invitation to Respond that was sent to Applicant by the Japanese Patent Office on July 1, 2008.

On page 3 of the Invitation to Respond, the JPO examiner in his Prefatory Report also cited three other references in addition to the presently submitted Cite No. F1. These three references, numbered 1 through 3 on page 3 of the Invitation to Respond, have already been submitted in the present application, in an IDS dated February 18, 2007. Because these references are thus cumulative to material already made of record, they are not being submitted here.

Concise Explanation of Relevance/Copy of Translation Pursuant to 37 C.F.R. § 1.98(a)(3)

As a concise explanation of the relevance of Cite No. F1, to begin with, a paraphrasing and translation, by applicant's undersigned representative, of pertinent portions of the Invitation to Respond is presented below. (A copy of this JPO communication in its entirety accompanies this paper.)

INVITATION TO RESPOND

*<paraphrasing>*The Invitation to Respond begins with recitations of formalities and citations of law, and notes that the examiner has, in his answer to (in his prefatory report on) appellant's brief and amendment on appeal, upheld his rejection, and further notes that the hearing for the appeal will be conducted grounded on the prefatory report.

<translation> This request . . ., on the commencement of the appeal hearing, seeks beforehand Appellant's opinion regarding the Prefatory Report.

<paraphrasing> The rest of the Invitation to Respond, prior to presenting the examiner's Prefatory Report, consists of notes and comments on formal requirements and procedural options.

Prefatory Report (Examiner's Answer)

<translation>

- Grounds for Non-Allowability of Claims

It is recognized that the amendment to claim 1 is with the objective of a narrowing limitation.

Newly cited Citation Document 4 (cf. paragraphs [0018] – [0022], particularly Sample No. 1 in Table 1) discloses a surface-coated cutting tool comprising a cemented-carbide base material corresponding to ISO Standard M20, which includes tungsten carbide and cobalt, with the cobalt inclusion amount being within 5 to 11 mass %, and, coated onto the cemented-carbide base material, a compound film composed of TiAlN, in which surface-coated cutting tool the thickness of the compound film is 0.5 μm and a compressive residual stress of approximately 0.67 GPa is imparted to the compound film.

<*paraphrasing*> The Prefatory Report next presents a rejection of certain claims directed to using a surface-coated cutting tool of the present invention for printed-circuit-board drilling (use claims being permissible under Japanese practice). The use claims are rejected over Hitachi Tools '901 (Cite No. F1 in the February 18, 2007 IDS in the present application). The Prefatory Report then notes, <*translation*> "whether or not the surface-coated cutting tool is used for printed-circuit-board drilling will not exceptionally change the constitution of the claim 1 surface-coated cutting tool itself, which is a product invention."

<*paraphrasing*> The Prefatory Report next discusses the pertinence of *Toshiba Tungalloy '328* (Cite No. F2 in Applicant's February 18, 2007 IDS) to the roughness and grain-size limitations recited in other claims.[1]

The examiner concludes the Prefatory Report by citing *Hitachi Tools '905* (Cite No. F3 in the February 18, 2007 IDS), as follows.

<*translation*> Finally, the compound film for the surface-coated cutting tool set forth in Citation Document 1 (concerning the coating film, cf. paragraphs [0004] – [008], especially conventional examples 1-4 in Table 1; concerning the base material, cf. paragraph [0013] and claim 1) is composed of TiN, TiAlN or TiAlVN, with a compressive residual stress of approximately 1.0 to 3.2 GPa being imparted to the film, and while the film thickness, at 3 μm is thicker by comparison with the invention of the present application, in the technical filed of coating tools, since making the coating-film thickness be the same level as that of the present invention is well known technology, applying the common-knowledge technology of the invention set forth in Citation Document 1, making the thickness be the same level as that of the present invention cannot be recognized as posing any particular difficulties.

Furthermore as to the relevance of Cite No. F1 (*Toshiba Tungalloy '685*, the lone reference being submitted in the present IDS, "*Tungalloy '685*" hereinafter), it is to be noted that Samples 1 and 6, and Comparative Example 1 of Table 1 therein, are the only disclosures of overlapping values. That is, each of the three samples has a film thickness of 5 μm, whereas the others are from 2 to nearly 15 μm thick. (The thickest of even the disclaimed thicknesses in the present application is 3 μm.)

Moreover, it is instructive to contrast the present invention with *Tungalloy '685* by examining the ratio of the given coating-film thicknesses to the associated compressive residual stress. The following table presents a comparison of this ratio for select samples from Table 1 of *Tungalloy '685* and the two tables in the specification for the present application.

[1] Similar roughness-limitation and grain-size limitation issues are disposed of in Applicant's (Appellant's) appeal brief of January 3, 2008. The appeal brief addresses Ground 2 of the rejections appealed from and on the basis of which claim 8, which recites a corresponding roughness limitation, was rejected in the present application. The brief also addresses Ground 3, on the basis of which claim 12, which recites a corresponding crystal-grain size limitation, was rejected. Although Ground 2 is based on U.S. Pat. No. 5,952,102 to *Cutler*, Ground 3 is based on the same Toshiba Tungalloy (JP 2001-234328) reference that the Japanese examiner cites.

Toshiba Tungalloy '685		Present Invention	
Sample No.	Thickness : Stress (μm : GPa)*	Embod. Ex.	Thickness : Stress (μm : GPa)
1	**1 : 1.33**	2	**1 : 3.67**
6	**1 : 1.59**	12/25	**1 : 3.33**
2	**1 : 0.37**	1	**1 : 0.67**
8	**1 : 0.20**	15	**1 : 7.50**

* (The kgf/mm^2 values in Table 1 of *Tungalloy '685* have been converted to GPa by multiplying by 0.0098.)

As the above table indicates, the ratio of coating-film thickness to compressive residual stress is consistently higher in the present invention over the claimed range.

In particular, while the film thickness of Sample 1 in Table 1 of *Tungalloy '685*, cited by the Japanese examiner in his Prefatory Report, is 0.5 μm, the film thickness of Embod. Ex. 2 in Table I of the present specification is a comparable 0.3 μm, yet the thickness-to-stress ratio is 2.75 times greater than that of Sample 1 in *Tungalloy '685*.

Sample 6 of *Tungalloy '685*, although not referred to by the Japanese examiner, has a film thickness identical to that of Sample 1, yet a higher compressive residual stress; nevertheless, the thickness-to-stress ratio for comparable Embod. Ex. 2 in the present invention is still 2.3 times greater.

While the film thicknesses of Samples 1 and 6 in *Tungalloy '685* are the minimum, the minimum film thickness of the embodiments presented in the present application is that of both Embod. Exs. 2 and 25, 0.06 μm (and the compressive residual stress in these later two instances is the same). Yet both have a thickness-to-stress ratio that is still more than twice that of the thinnest *Tungalloy '685* coating film with the greatest compressive residual stress.

Meanwhile, the film thickness of *Tungalloy '685* Sample 2 is 2.0 μm, near the upper limit of the film-thickness range claimed in the present invention, 1.5 μm, which is the thickness of Embod. Ex. 1. Yet the thickness-to-stress ratio for Embod. Ex. 1 is still 1.8 times that of *Tungalloy '685* Sample 2.

Sample 8 of *Tungalloy '685* has the highest compressive residual stress among the invention samples, while Embod. Ex. 15 has the highest in the present invention for the claimed film-thickness range. Yet the thickness-to-stress ratio for present-invention Embod. Ex. 15 is 37.5 times greater than that for *Tungalloy '685* Sample 8.

Furthermore, it is to be noted that the Comparative Samples in Table 1 of *Tungalloy '685* actually have higher compressive residual stress than any of the samples according to the *Tungalloy '685* invention. Yet setting comparable examples among the *Tungalloy '685* Comparative Samples against embodiment examples of the present invention still results in thickness-to-stress ratios that are significantly higher.

Namely, *Tungalloy '685* Comparative Samples 1 and 2, having respective film of thicknesses 0.5 μm and 2 μm, and Comparative Sample 4, having the highest compressive residual stress, have thickness-to-stress ratios of 1 : 2.00, 1 : 0.51 and 1 : 0.13. The thickness-to-stress ratios of the comparable embodiment examples in the present application, i.e., Embod. Exs. 2, 1 and 15, are respectively 1.8, 1.3 and 57.7 times higher.

Finally with regard to the relevance of *Toshiba Tungalloy '685*—the presently submitted Cite No. F1—together with the Patent Abstracts of Japan translation of the abstract for the reference, a machine translation of *Toshiba Tungalloy '685* from the JPO website is being provided in the present IDS.

Notwithstanding the reliability of the machine translation, Applicant's undersigned representative presents below a translation of two selected paragraphs from Cite No. F1.

Toshiba Tungalloy '685 paragraph [0005]

Japanese Unexamined Pat. App. Pub. No. S64-31972 sets forth a coated sintered alloy in which a compressive stress of 50 kgf/mm^2 has been imparted to the hard phase present in, and/or the coating on, the surface portion of a sintered alloy coated by CVD. The coated sintered-alloy of this publication is outstanding in that, using a blasting technique such as shot peening or sand blasting to apply impact along the coating surface of the sintered alloy coated on by conventional CVD, rendering into compressive stress the tensile stress present in the hard phase of and/or the coating on the surface portion of the base component, the strength of the coated sintered alloy is remarkably enhanced. Nevertheless, a problem with this alloy is that, owing to the amount of binding phase in the base component, to the thickness of the coating, and to the coating-film quality and to multi-layering of the coating film, the strength will, conversely, deteriorate.

(Emphasis added.)

Toshiba Tungalloy '685 paragraph [0010]

A coated sintered alloy of the present invention is a sintered-alloy base component composed of a 2 to 25 mass % binder phase being a solid-solution alloy containing as the principal ingredient Co, Ni, or Co and/or Ni, with the remainder being at least one hard phase selected from carbides, nitrides, oxycarbides, and oxynitrides of periodic-table Group 4a, 5a and 6a metals, and components that are reciprocal solid solutions thereof, and unavoidable impurities, onto the surface of which a coating that is single-layer or multilayer is coated, characterized in that the surface of the coating is free of cracks, and in the portion of the surface of the base component that extends from the base-component surface inward to 50 μm, a compressive stress of 30 kgf/mm^2 is imparted to the hard phase.

(Emphasis added.)

Applicant, having made a Request for Continued Examination in order to properly submit the present IDS, respectfully requests the Examiner to consider Cite No. F1 in light of the foregoing remarks on the relevance, to indicate on the accompanying IDS List of References her having considered the Cite No. F1, and if the Examiner agrees that the present invention as claimed remains patentable over the prior art of record, to issue a new Notice of Allowability making the IDS List of References of record in the present application.

Respectfully submitted,

July 18, 2008

/James Judge/

James W. Judge
Registration No. 42,701

JUDGE PATENT ASSOCIATES
Dojima Building, 5th Floor
6-8 Nishitemma 2-chome, Kita-ku
Osaka-shi 530-0047
JAPAN

Telephone: **305-938-7119**
Voicemail/Fax: **703-997-4565**